

Lesson #3: Multiplication & Division with Integers

When multiplying or dividing integers you treat multiply or divide the numbers as though they are natural numbers, then use the properties below to determine the sign of the product or a quotient.

Properties for Multiplication of two Integers:

<i>positive integer</i> × <i>positive integer</i> = <i>positive integer</i>	(+)(+) = +
<i>positive integer</i> × <i>negative integer</i> = <i>negative integer</i>	(+)(-) = -
<i>negative integer</i> × <i>positive integer</i> = <i>negative integer</i>	(-)(+) = -
<i>negative integer</i> × <i>negative integer</i> = <i>positive integer</i>	(-)(-) = +

Solve for the following products:

a) $(9)(2) = (+) \cdot (+) = +$
 $9 \cdot 2 = +18$

c) $(-9)(2) = (-) \cdot (+) = (-)$
 $-9 \cdot 2 = -18$

b) $(9)(-2) = (+) \cdot (-)$
 $9 \cdot (-2) = -18$

d) $(-9)(-2) = (-) \cdot (-) = (+)$
 $(-9)(-2) = +18$

When two or more numbers are multiplied the result is called the **product**.

Same Rules!

Properties for Division of two Integers:

This ...	Symbolically...	Means the same as this:
$\frac{\text{positive integer}}{\text{positive integer}} = \text{positive integer}$	$\frac{(+)}{(+)} = +$	$(+) \div (+) = +$
$\frac{\text{positive integer}}{\text{negative integer}} = \text{negative integer}$	$\frac{(+)}{(-)} = -$	$(+) \div (-) = -$
$\frac{\text{negative integer}}{\text{positive integer}} = \text{negative integer}$	$\frac{(-)}{(+)} = -$	$(-) \div (+) = -$
$\frac{\text{negative integer}}{\text{negative integer}} = \text{positive integer}$	$\frac{(-)}{(-)} = +$	$(-) \div (-) = +$

Solve for the following quotients:

a) $(15) \div (5)$
 $(+) \div (+) = +$
 $15 \div 5 = (+3)$

c) $(-15) \div (5)$
 $(-) \div (+) = (-)$
 $(-15) \div (5) = (-3)$

b) $(15) \div (-5)$
 $(+) \div (-) = (-)$
 $15 \div (-5) = -3$

d) $(-15) \div (-5)$
 $(-) \div (-) = (+)$
 $(-15) \div (-5) = (+3)$